

Chapter 2. Operating Your Motor Fuel Tank

Operating and maintaining your UST system is an important part of your long term business plan to protect your investments while protecting the environment.

This guide is for people who own or operate underground tanks at gas stations, convenient stores, or vehicle fueling centers. This includes **motor fuel tanks** as well as **waste oil tanks**.

The majority of Maine's underground storage tanks are at motor fuel facilities. In this chapter, you will learn about options, actions, deadlines and records for your UST system.

In this chapter you will learn how to

- ☐ Detect leaks
- ☐ Prevent spills and overfills
- ☐ Reducing corrosion
- ☐ Stop vapor loss
- ☐ Prevent accidents at the pump



All motor fuel and waste oil underground tanks, including product piping, installed after September 16, 1991 must be double walled.



Motor fuel and waste oil underground tanks, including product piping, installed before September 16, 1991 were not required to be double walled. However, more leak detection rules apply to make extra sure these older systems are safe.



Figure out which sections apply to your tank system, then read about your:



Detecting Leaks

Before you go any further you need to know the date your UST system was installed. Not every page in this section applies so figure out which pages you must read and which pages you can skip.

Newer Tanks

Those installed after
September 16, 1991..... **See Pages 17-26**

Older Tanks

Those installed before
September 16, 1991..... **See Pages 27-43**



If you don't know when the facility was installed, contact your supplier, the former owner, or DEP for this information.

One of the most important things you can do is to periodically ensure that your UST tank and piping are not leaking. In this section we will cover options, actions, and records.



**Report all
known or
suspected
leaks
immediately.**

Terms to know in this section

- ☐ Automatic line leak detector or ALLD
- ☐ Automatic tank gauge or ATG
- ☐ Interstitial monitoring
- ☐ Pressurized piping
- ☐ Safe suction
- ☐ Suction piping
- ☐ Sump

Not every page in this section will apply to you.
Make sure you know your tank system so you can learn about your particular requirements.

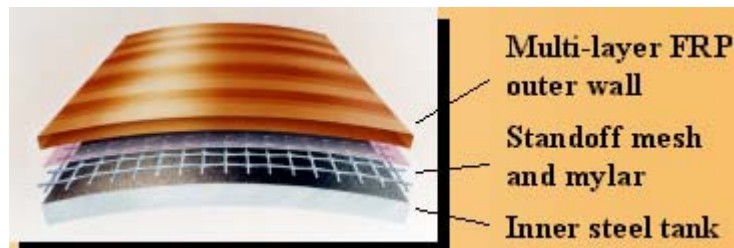
Newer Tank Systems



Your choices for leak detection methods are different for tanks and piping.

Leak Detection for Tanks

It's straightforward: You must have a double-wall tank with interstitial monitoring. That means you have a tank with an inner and outer wall, plus some way to check for leaks between the two walls. To be more specific, you must continuously check the interstitial space, the gap between the inner and outer wall of the tank, and ensure there is no petroleum or water in that space.



What does a double-wall tank monitor look like?

Your tank system should have an electronic sensor in the interstitial space that is connected to a stand-alone or combination console. The sensor should be set to check the interstitial space on a continuous basis.



Stand-alone console



Combination console

Leak Detection for piping

Your leak detection method depends on the type of piping you have. You either have pressurized or suction piping.



First, figure out if you have pressurized or suction piping.

Pressurized

- ☐ Fuel is pushed out of tank.
- ☐ Pump is inside tank.



Suction

- ☐ Fuel is pulled out of tank.
- ☐ Pump is under dispenser.



Then, check out your leak detection equipment:

For Pressurized piping (most common), you must have the following type of leak detection equipment:

- ☐ Double-wall piping with interstitial monitoring, AND
- ☐ Automatic line leak detector

For Suction piping (less common), you must have the following type of leak detection equipment:

- ☐ Safe suction piping, OR
- ☐ Double-wall piping with interstitial monitoring

What does a double-wall piping monitor look like?



There should be a sensor in the lowest point of the piping system, typically located in the sump where the pump is housed. The sensor should be wired into the same console used to show leak detection for the tank as well.

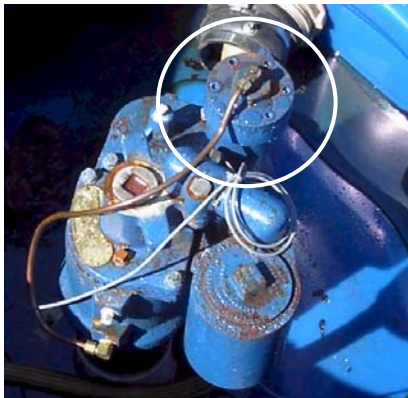


There are a variety of makes and models of piping sensors. All sensors should have a vertical tube or cylinder and wiring that connects the sensor to a console. Sensors can look for oil or water or both.

What is an automatic line leak detector?



An automatic line leak detector is a mechanical or electronic device that constantly monitors piping pressure. When a leak occurs, the pressure drops and the leak detector shuts off fuel flow. It is usually located on the pump head, which should be accessible when you open up the sump manway. They come in blue, black, red, and tan.



Automatic
Line
Leak
Detector

There are many different makes and models of leak detectors. Can you find yours?



Red Jacket



Vaporless



Veeder Root



FE Petro



Incon



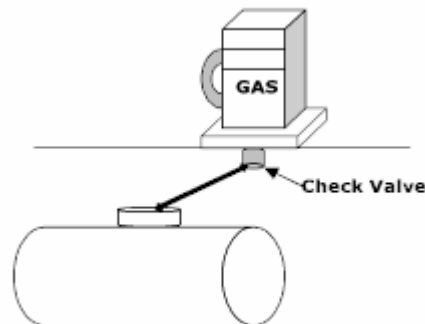
FE Petro



What is Safe Suction?

Safe suction means your suction piping meets three conditions:

1. **The piping slopes back** to the tank, meaning the dispenser is always higher than the tank.
2. **The piping operates at less than atmospheric pressure**, meaning it is not pressurized.
3. **There is only one check valve** at the top of the piping run, underneath the dispenser, meaning that a break in the piping will cause the fuel to drain directly into the tank with no release to the environment.



If you meet all three conditions, you do not need to test the piping: only watch for a malfunctioning pump.

If the pump is sucking in air and not providing fuel, you may have a leak in the piping. Notify DEP immediately.



Now that you know what type of you leak detection equipment you have, what do you do next? Check for leaks! State and Federal law says there are certain things you must do to keep an ever-vigilant eye for potential problems.



Checklist: Doing Leak Detection Right

- ☐ Check the interstitial space of the tank.
- ☐ Check the interstitial space of the piping.
- ☐ Understand exactly what you are measuring and what the results mean.
- ☐ Make sure you keep records of your results.
- ☐ Treat a suspected release as a serious problem.

Interstitial monitoring

You must ensure that the tank and piping are tight and the interstitial spaces are free of liquid oil and water. The presence of oil means the inner wall of the tank may have a leak. The presence of water means the outer wall of the tank may has a hole and ground water is getting in. Under either scenario, it means you have a problem.

In a nutshell, having a double-walled system is only as good as your diligence to monitor what is going on between the two walls.

For Tanks Checking the double-wall tank means checking the console that is wired to a sensor in the interstitial space. Your console will either be a stand-alone or combination device. Once a year during inspection, the console and the sensor must be tested to make sure they are functioning properly.



Always look and listen for alarms. Report all known or suspected leaks immediately.

Interstitial monitoring means always watching for leaks.

Check the system every 30 days for proper operation by testing the alarm button.

For Piping Checking the double-wall piping means checking the console that is wired to a sensor in the lowest point of the piping system, often called the sump. Your console will either be a stand-alone or combination console. Once a year the console and sensor must be tested to ensure they are working properly.



Always look and listen for alarms. Report all known or suspected leaks immediately.

Interstitial monitoring means always watching for leaks.

Check the system every 30 days for proper operation by testing the alarm button.



Problems with double-wall piping

If anything goes wrong with interstitial monitoring, chances are it will occur in the piping sump. Here are common problems found in sumps and what you can do about it. Have your UST service provider fix these.

- ☐ Water or oil accumulates in bottom.
- ☐ Sump sensor raised too high to detect release.
- ☐ Piping boots loose, damaged or cracked.
- ☐ Holes in side of sump wall or sump bottom.

For automatic line leak detectors

You must ensure that you have an automatic line leak detector placed on each length of pressurized pipe. You must also:

- ☐ Have the detector tested annually.
- ☐ Respond to shut-down or slow-flow events.
- ☐ Notify DEP of known or suspected releases.



Problems with automatic line leak detectors

- ☐ If they are not working properly, they can mask a really big leak.
- ☐ They can wear out after a while.
- ☐ If someone removes the detector to by-pass a reoccurring slow-flow or shut-down problem.

What happens when a leak detector detects a leak?

- **For mechanical models:** the leak detector will constrict the line, causing a “slow-flow” situation at the dispenser. If a customer complains that he/she is getting only a trickle out of the nozzle, chances are the line leak detector has tripped, indicating a potentially serious problem.
- **For electronic models:** the leak detector is wired to the sump, so if the leak detector finds a leak, it shuts down the pump. Now the customer gets no fuel. This could indicate a serious problem.



Always watch for fueling interruptions due to unexplained pump shut down or slow-flow from the nozzle. Report all known or suspected leaks immediately.

Testing a line leak detector

Testing a line leak detector means removing fuel from the pipe at a known rate and seeing if the leak detector catches it.



The certified tank installer or inspector removes fuel from the crash valve opening beneath the dispenser. Fuel is removed at a rate of 3 gallon per hour, the minimum detection limit of the line leak detector.

If the leak detector detects the fuel “loss”, it passes the test. If it fails to detect the “loss”, the leak detector isn’t doing its job properly and should be replaced.

Testing your line leak detector once a year is one of the most important things you can do to make sure you have a safe and leak-free underground tank system.



The double-wall tank and the piping must be checked every 30 days. But wait, there's more. You must also prove it. Telling a DEP inspector that you do it without any written proof is not acceptable.

Interstitial Monitoring: Two ways of record keeping

MAY 28, 2002 11:21 AM

SYSTEM STATUS REPORT
T 4:PERIODIC TEST FAIL
L 2:SENSOR OUT ALARM
INVENTORY REPORT
T 1:PREMIUM

Electronic Printout

Tank interstitial space check-----tank moisture check

1-2000	OK Setup	1-2-00	at tank filler
2-2000	"	2-2-00	"
3-2000	"	3-2-00	"
4-2000	"	4-2-00	"
5-2000	"	5-2-00	"
6-2000	"	6-2-00	"
7-2000	"	7-2-00	"
8-2000	"	8-2-00	"
9-2000	"	9-2-00	"

Manual Print Out

ALLDs: Record keeping for automatic line leak detectors is simply a matter of keeping handy the results of the annual functionality test. This test can be done by your inspector



You must have all your leak detection records for the last 3 years preceding the inspection in order to be legal.

It happened in Maine

One day the owner of a convenience store in a small Maine town noticed that the interstitial monitor was in alarm for his two-compartment tank. He promptly called the person who installed the tanks and notified DEP. The installer discovered that the inner wall of the gasoline compartment had somehow failed, allowing gasoline into the interstitial space. The tank was repaired, tested and found to be tight again. No further alarms occurred. The tank was next to a drinking water source and residential neighborhood. Because the owner took the alarm seriously, the problem was promptly found and fixed before it got worse.

Leak Detection Summary for Newer Tanks

Doing leak detection is fairly straightforward but depends on the type of piping you have. Here is a summary.

Leak Detection	Method	Action	Records*	Bottom Line
Tank	Interstitial Monitoring	Check system every 30 days for proper operation	Keep hardcopy records	Continuously look for leaks
Pressurized Piping	Interstitial Monitoring	Check system every 30 days for proper operation	Keep hardcopy records	Continuously look for leaks
Pressurized Piping	Automatic Line Leak Detector	Have function tested annually	Test results	Pressurized piping needs extra vigilance
Safe Suction Piping	Watch for improperly operating pump as evidence of a possible leak			
"Unsafe" Suction Piping	Interstitial Monitoring	Check system every 30 days for proper operation	Keep hardcopy records	Continuously look for leaks

*** KEEP ALL LEAK DETECTION RECORDS FOR LAST 3 YEARS READILY AVAILABLE.**

It happened in Maine

A new convenience store with underground tanks was installed in a town in coastal southern Maine in 1990. In March 1999 the local fire department discovered gasoline in a drainage ditch coming from the facility. The Department discovered that approximately 4,000 gallons of gasoline had escaped from a piping sump though a failed seal over an 8-day period. The facility owner had failed to maintain the secondary containment for the piping. They also had failed to report to the Department alarms at 3 different times in the recent past and failed to report the discovery of product in a sump. Because drinking water supplies were not impacted, the clean up cost was only \$73,000!

